

APPLIED PSYCHOLOGY

BY PROF. STEPHEN SHELDON COLVIN

PSYCHOLOGY, the newest of all the sciences, has been discovering and relating its principles during the last quarter of a century. It has by no means found all of its facts and is far from a complete interpretation of those which it has discovered. Nevertheless there are some things that it has worked out with absolute certainty and



THE PLAYERS REMEMBER THE GAME IN TERMS OF THE MOVEMENTS THEY MADE

many others concerning which it is in a position to make definite hypotheses. The time has now arrived when it is attempting to apply its facts and principles to the solution of some of the most important problems of our daily life.

It is a matter of common knowledge that during the last few years there has been an ever growing attempt to cure diseases, both of the mind and of the body, through the tremendous power of suggestion. Prof. Munsterberg, in this country and others abroad, through experiments and practical applications, have conclusively shown that our knowledge of the laws of mind may be used to relieve human life of some of its greatest ills. Probably no discovery in physical science promises to be of as great and lasting benefit to the world as the discovery of the power of suggestion as a law governing a large part of the life of every individual. The time is soon coming when no reputable physician will dare to practice medicine without some knowledge of the facts of psycho-therapeutics.

Recently, and very largely under the leadership of Prof. William Stern, of the University of Breslau, extensive investigations have been carried on in regard to the psychology of testimony. These investigations have thrown important light upon a vital phase of court procedure and have shown its great weakness in many particulars. Soon this new field of applied psychology will be able to lay down definite laws in the conduct of the examination of the witness. The time is not, probably, far distant when every court will have some officer attached to it who is an expert in the psychology of testimony and who will be able to correct many misunderstandings that are now current in regard to the essential elements of the witnesses' report and the extent of its belief.

In Zurich Dr. Jung has devised a method for discovering some of the most important facts in regard to the mental makeup of an individual. This procedure he calls the "diagnostic association method." He gives to the subject to be tested, in succession, a list of 100 words, to which the subject is to respond with the first association that comes into his mind after the presentation of the original word. The character of the associations formed and the time which intervenes between the presentation of the stimulus word and the response are important elements in diagnosing the mental condition of the individual and in discovering essential facts in his previous history. This method has been used with marked success in the discovery of crime and it promises to be of great importance in the diagnosis of nervous diseases and in the detection of the criminal.

While the application of psychology to the treatment of diseases, to the discovery of truth and to the detection of the criminal is tremendously important, another field of its application, while less spectacular and while not calculated to excite immediately so great popular interest, promises to be of more far-reaching consequence in the regulation of our daily life. This last-named field is in the psychology of learning and applies to the work of our entire school system, from the kindergarten through the university. The leader in this movement is Prof. Meumann, of the University of Halle. During the last decade Meumann and his pupils have been attempting to discover the most direct and economical methods of the acquisition of knowledge and a large amount of material has been brought together, many facts have been established and conclusions of practical value obtained. It is in this phase of the work of applied psychology that the University of Illinois is particularly interested. For the last four years experiments have been carried on under the direction of the psychological laboratory at Illinois, in regard to determining some of the most important facts concerning memory and kindred topics, the thought being that if the department of psychology were to be of maximum

service to the state in which it is situated and to which it owes its support, it should be able to show how the theoretical work of the laboratory can be applied to the bettering of human conditions.

The agricultural and the engineering experiment stations at the university have been attempting to give the practical men of the state information in regard to the best means of preventing wastes and of obtaining the greatest efficiency in the various fields of their endeavor. A similar attempt is being made by the department of psychology of the university to show to the schoolmen of the state how they can save time and how they can so regulate the environment of the school as to get the greatest results with the least possible expenditure of energy.

All knowledge is based fundamentally upon memory and it is quite obvious that if the most economical methods of learning are discovered and applied tremendous wastes in the schoolroom will be saved. It is a striking fact that most students who come to the university do not know how to properly memorize their material. They lose a very large amount of time that might be saved greatly to their advantage, if they had the simple knowledge of how to go about their work before them. What is true of the university student is undoubtedly true even to a greater degree of the pupils in the public schools. It is clear that if the teachers knew what was the best method by which the pupil could memorize a certain material and could train that pupil in such methods of memory highly beneficial results would be accomplished.

Working along this line, some years ago the department of psychology at Illinois instituted a series of experiments to determine as far as possible the exact facts concerning what is technically known as the ideational types of school children and the relation of these types to the memorizing of different kinds of material. By the ideational type the psychologist understands the sort of mental imagery in which a person thinks—for example, if a child recalls in imagination a bird he may do so by having a mental picture of the bird as a visible object or he may recall the bird in terms of the song that it sings. It is further possible that he may not, in thinking of the bird, see it mentally or recall its song, but that he may merely see the word, bird, written or hear it spoken, or attempt to pronounce it himself. If he actually sees the bird in his mind's eye he is said to have concrete visual imagery. If he hears the song that it sings mentally, he is said to have concrete auditory imagery. If he sees not the bird but the word, he is said to have verbal-visual imagery, and if instead of seeing the word or hearing it he simply has the mental imagery of pronouncing the word, he is said to have verbal-motor imagery.

It is then possible for the person in his ordinary thinking to employ either concrete imagery, in which he recalls the actual object as presented through some of his senses or to employ verbal imagery, in which latter case he does not recall the object at all, but in which he recalls the printed symbol for that object either in visual, auditory or motor terms. It is possible also to have not only concrete visual and auditory imagery but to have concrete motor imagery as well. A person, for example, in mentally recalling a foot race, may think of the runner as he appears ready for the starting signal, or he may think of the starting signal, or, finally, he may think of the muscular sensations which come in running the race. In this latter case he would think of the runner in terms of concrete motor imagery.

Probably the football player, in recalling the experiences of the game in which he has taken a part, does not see the plays as the spectator does from the grandstand, but recalls them in terms of the movements which he makes in executing them.

It doubtless makes a good deal of difference just what sort of imagery the school child uses in memorizing his material, as to whether the best results are to be obtained or not and it is obviously important that the teacher should know the character of this imagery if he is to deal adequately with the pupil. The results of the experiments by the department of psychology at the University of Illinois clearly indicate that most children in the beginning grades of the school think predominantly in terms of objects seen, that is, they possess concrete visual imagery and probably, to a certain extent, also concrete auditory and motor imagery as well. Later on this concrete form of imagining dies out. They think in terms of words and the actual experience behind these words becomes dim and obscure. The whole process is to make their learning a thing of books and not a thing of vital, pulsating life. This is a great advantage in abstract thinking. It is, however, a distinct hindrance in appreciation of culture and art. If we wish to train our children to think accurately and abstractly we must train them, as the schools evidently are now training them, in the direction of verbal imagery. If, however, we wish to develop artists, poets, men of letters, inventors and those with technical skill in the various professions, we must see to it that this concrete imagery is not lost; for if this loss takes place it will mean tremendous waste and disaster for many.

The experiments further showed that those children who thought in visual terms were best able to memorize material with a visual content and that those who thought in auditory or motor terms were best able to learn material with an auditory or motor content. This, of course, means as far as the application of results to school work is concerned that the material which the child learns must be in some way adapted to his ideational type, if the best results are to be accomplished.

This, perhaps, is not so vital a fact with the average child who has many ways, it may be, in which he can imagine his experience, but there are always in every schoolroom numbers of exceptional children who are very slow to get on in certain fields and who, nevertheless are far from being mental defectives. To take a concrete illustration, there are children who have great difficulty in learning to read and yet who are often bright in other school subjects. It is probable that such children have not developed the type of verbal-visual imagery. The printed word fails to carry its proper significance. Such a child, obviously, must be treated differently from the average individual. In the first place, he may be helped in his reading by being instructed to spell and pronounce words. The method of showing him words and having him grasp them as visual signs will be a hopeless method of procedure in his case. Further, the child may be aided by a systematic attempt to strengthen his verbal-visual imagery. There is ample evidence that children can be trained in any type of imagery and it is the business of education to see that those who are defective in an essential type are trained to overcome this defect.

We cannot think for a moment of demanding the same sort of thing from the child whose eyesight is poor that we demand from the child of normal visual acuity. It is just as foolish to expect the child who is defective in a certain ideational type to do the work of a normal child as it is to expect the child who is defective in his visual sensibility to accomplish the same results under the same conditions that the child of normal sensibility accomplishes.

Another important problem which has been undertaken by the psychological laboratory at the university is to discover the most advantageous conditions, besides those relating to the ideational type, under which certain kinds of school material may be memorized. At the outset of such an investigation the psychologist is confronted with the difficulty of selecting the sort of material for memorizing which will be sufficiently uniform to be tried on many children and on the same child at various times. It is quite evident that if we use the ordinary materials of the schoolroom, such as the child has had in his reading, geography and history room, that this material will not be of the uniformity desired. It was to avoid this difficulty that the psychologist, Ebbs, nearly 25 years ago, tried a memory experiment, in which he used for material nonsense syllables, that is, certain syllables which could be pronounced and which yet had no significance; syllables, for example, like nee-doo-hux. Here we have a relatively uniform material that has, for the most part, little or no significance.

Using this kind of material, several thousand school

children in Urbana, Champaign, Bloomington, Danville and in some of the normal schools of the state have been tested to determine certain conditions under which they learn most advantageously. One of the questions asked in these investigations has been this: Suppose the child is given something to learn and is asked to recall it later on, under what conditions during the interval between learning and recall will his memory be most retentive? The data obtained has been so extensive that it has not been completely worked over as yet. Some very interesting conclusions, however, have been reached—among these, that writing serves as a great distraction and that the child can recall material better when the interval is filled with such a strenuous activity as number work, than when it is filled with the writing of some familiar phrase, as "My Country, 'tis of Thee." The greater distracting tendency of writing than of other school occupations shows itself particularly in the lower grades. It has also been found out that when young children are required to learn by keeping perfectly still they are at a disadvantage. If you wish to have the child learn under the most disadvantageous conditions, require that child to keep perfectly still.

The experiments at the University of Illinois clearly show that oral composition is the most satisfactory method of developing real power of expression in young children.

If it is finally determined how the interval between learning and recall can be most advantageously filled, then the arrangement of the school program of studies can be worked out on a psychological basis and not on the more or less haphazard basis which seems to be the present plan.

Among other problems in this field of applied psychology which the department has undertaken or proposes to carry out in the near future may be mentioned the following:

1. What are some of the most advantageous conditions of learning to spell correctly?
2. In learning, is it better to give all of the time to a study of the subject matter to be learned, or is it better to devote a portion of the time in the attempt to recall material that has already been mastered?
3. Is it better, in learning, to attempt to memorize the material by commencing at the beginning and running through to the end consecutively and by repeating this process until the whole has been mastered or is it better to learn a part and then another part, and so on?
4. What method of presentation is more advantageous in learning? By this is meant, specifically, is it better to present to the child material to learn orally or visually, and is it better to present the material simultaneously or successively—that is, should the whole thing that he is to learn be given at once or is he to study one part and then the next and so on?

In considering the first of these problems it may be said that results at Illinois clearly point to the fact that the method of teaching children to spell by giving the word as a whole and not breaking it up into syllables is not the psychological method and that the old method of syllabication with some of its obvious faults has distinct advantages over some of the extreme methods of today.

Appropos the second problem it is clearly established by experiments at Illinois that there is great advantage in not spending the entire period of learning on studying the material presented, but that it is of very great advantage to spend part of this time in attempting to recall what has been shown. Train the pupil to look at the page that he is trying to memorize for a period and then to turn his gaze away and in his mind's eye recall the printed matter.

It is generally held by investigators that the best method of memorizing is to learn the material by commencing at the beginning and running through the whole process to the end. The Illinois experiments brought out this fact, that in such consecutive learning there are certain parts that are mastered more quickly than others and that it is advantageous to first go over the whole material consecutively until the more easily acquired material is mastered and then to spend some time in learning those parts that are more difficult and to finally relearn the whole consecutively.

Now, in attempting to answer the fourth question, experiments have been carried on at Illinois which show rather clearly that the most advantageous way to present material to little children is visually and in succession. The reason for this, in part at least, is because successive presentation secures better attention than simultaneous presentation and that the word when seen, especially if it is difficult, can be better comprehended than if it is merely heard.

The foregoing account gives a statement of some of the most typical and important experimental investigations now in progress in the psychological laboratory at the University of Illinois. As has already been said, the main emphasis is being placed upon the psychology of learning, more specifically on technique and economy in our processes of acquisition. At the same time ample scope is given for the theoretical aspects of the subject so that the field in a general way may be covered and that those who wish to obtain higher degrees in the subject may find ample opportunity for research in the direction which interests them most.

IS LANGUAGE OF COMMERCE

English Tongue, Therefore, Seems Destined to Be the First in Importance.

At the beginning of the eighteenth century the English language was spoken by 20,000,000 people. At the beginning of the twentieth century that tongue was spoken by 150,000,000 people; and it is not extravagant to predict that English will be the lan-

guage of more than half of the then existing Caucasian race upon the advent of the twenty-first century.

An accomplished linguist made remark that if he could court his lady love he would speak the Italian, when praying to God he would employ the Spanish, when conversing with friends he would use French, and when making a trade there was nothing like the English. An that is the

secret of the marvelous expansion of the use of the English tongue. This is the age of commerce, and there is a directness in our language that is found in no other; and candor is the soul of all legitimate trade.

When the Plantagenets first reigned in England Chaucer was not yet born, nor did he arrive until the War of the Roses. He found the Latin tongue of polite speech, and even Bacon wrote his masterpieces in that language. Elizabeth spoke it. It was the tongue of the court and of diplomacy and

such it remained until supplanted by the French, which is yet, perhaps, the language of diplomacy in congresses of the "powers."

But this is a very different age from that when Louis XIV. reigned, when Bolingbroke was a minister, when Voltaire was the first man of letters in the world. It is the age of trade, and the English tongue has taken its place as the dominant speech of the world.

And why not? Shakespeare wrote it, as did Milton. Chatham spoke it,

as did Burke, Dryden and Pope, Swift and Addison employed it. It is the richest language in the world, having gathered its inexhaustible stores from every other tongue it could lay hands on. It is the language of history and of poetry, of debate, and of eloquent declamation, but above all it is the language of commerce, and bargains are struck by means of it. While the "first senate of the world" hung on the splendid periods of the grand old man, Chinese merchants were exchanging tea for cotton fabrics upon

terms expressed in the "tongue that Shakespeare spoke."—Washington Post.

Value of Black Locust.

The tree that gives the best results with little care after planting is the black locust. It does well on any soil, wet or dry. It is a quick grower and when planted thick—say six feet each way—the trees will grow tall with little top, and will at the end of five years be ready for the first thinning out.

DOCTOR'S BEST FORMULA

For Remarkably Quick Action on Colds and Coughs.

This prescription will frequently cure the worst cold in a day's time and it is a sure cure for any cough that can be cured. "Two ounces Glycerine; half ounce Concentrated Pine; Put these into half a pint of good whiskey and use in doses of teaspoonful to a table-spoonful every four hours. Shake bottle well each time." Any druggist has these ingredients in stock or will quickly get them from his wholesale house. The Concentrated Pine is a special pine product and comes only in half ounce vials each enclosed in an air tight case; But be sure it is labeled "Concentrated." This formula cured hundreds here last winter.

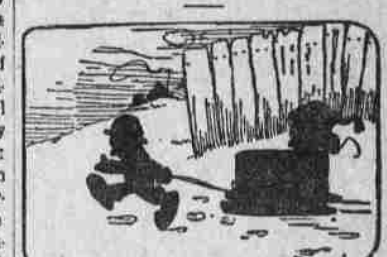
ENCOURAGING SIGNS OF LIFE

Liberal Contributions in United States and Canada for Work of the Foreign Missions.

In spite of the financial depression the offerings of the United States and Canada for foreign missions increased last year \$682,000. The increase of income from the foreign field was even more remarkable, being \$1,360,000. The total gifts on the foreign field was \$4,844,000, and this amount was 48 per cent. of the total amount contributed for foreign missions by the Protestant churches of North America.

The increase of native converts last year was 164,674, or over 450 a day. The cumulative effects of the foreign mission enterprise is shown by the fact that it took 100 years to gain the first million converts. The second million were secured in 12 years, and they are now being added at the rate of a million in six years. The percentage of increase of the church membership of America was one and one-half, while the increase of American missions abroad was 12 per cent. Two members were added in America for each ordained minister, while 41 were added in the foreign field for each ordained American missionary.—The Missionary Review of the World.

THE ETERNAL FEMINE.



"Why can't you run a little faster, Willie?"
"Gee! dere's no pleasin' some wom-on! If I was er race horse, you'd kick because I couldn't fly!"

One on the Judge.

A newly qualified judge in one of the small towns of Tennessee was trying one of his first criminal cases. The accused was an old dorky who was accused of robbing a hen-coop. He had been in court before on a similar charge and was then acquitted.

"Well, Tom," began the judge, "I see you're in trouble again."
"Yes, sah," replied the dorky; "the last time, Jedge, you was ma lawyer."
"Where is your lawyer this time?" asked the judge.

"I ain't got no lawyer this time," answered Tom. "I'm going to tell the truth."

Why "Potter's Field" for Beggars

It is not because the beggar fails to make money that he finally lands in the potter's field. "Any good, industrious beggar," says Mr. Forbes, "can and does make a great deal more money than the average workman." But the trend of the beggar is downward, and in the end he is pretty sure to become a hopeless wreck and a derelict.

All in the Name.

Phyllis (up from the country)—But, Dick this is just like the last place you brought me to see here.

Dick—My dear Phyllis, don't be absurd. This is "The Naughty Girl of Nice," and that other was "The Grasse Widow." Surely you know that Nice and Grasse are two entirely different places.—Punch.

The world is all gates, all opportunities, strings of tension waiting to be struck.—Emerson.

To learn to work and, work cheerfully, is the central lesson of life.—Cohen.

HARD TO DROP But Many Drop It.

A young Calif. wife talks about coffee: "It was hard to drop Mocha and Java and give Postum a trial, but my nerves were so shattered that I was a nervous wreck and of course that means all kinds of ails."

"At first I thought bicycle riding caused it and I gave it up, but my condition remained unchanged. I did not want to acknowledge coffee caused the trouble for I was very fond of it. At that time a friend came to live with us, and I noticed that after he had been with us a week he would not drink his coffee any more. I asked him the reason. He replied, 'I have not had a headache since I left off drinking coffee, some months ago, till last week, when I began again, here at your table. I don't see how anyone can like coffee, anyway, after drinking Postum!'"

"I said nothing, but at once ordered a package of Postum. That was five months ago, and we have drank no coffee since, except on two occasions when we had company, and the result each time was that my husband could not sleep, but lay awake and tossed and talked half the night. We were convinced that coffee caused his suffering, so he returned to Postum, convinced that coffee was an enemy, instead of a friend, and he is troubled no more with insomnia."

"I, myself, have gained 8 pounds in weight, and my nerves have ceased to quiver. It seems so easy now to quit coffee that caused our aches and ails and take up Postum."

Read the little book, "The Road to Wellville," in pkgs. "There's a Reason." Ever read the above letter? A new one appears from time to time. They are genuine, true, and tell of human interest.